

Appl. No. 10/071,862

Dated 01/19/2005

Reply to Office Action of 10/21/2004

IN THE SPECIFICATION

Please amend the Specification as follows:

Please amend paragraph no. [0025] beginning at page 8, line 2, as follows:

"FIG. 1 is an overview of ~~the some~~ embodiments of router systems."

Please amend paragraph no. [0052] beginning at page 14, line 23, as follows:

"FIG. 7 uses an example to contrast the differences between the graph representation and the grid representation. A typical situation in a design is that the pin shape is very complex. For a grid-based router to address the issue, it will need to create many extra "access grids" on the pin layer to finish the routing. With a grid based router, due to the uniform structure requirement of the grid, these access grids will ~~needs to~~ be present at other routing layers as well. Therefore, the memory requirement increases significantly. Shown in FIG. 7, many triangle shapes (uncommon) nodes are created at layer 1, 710, due to the pins. In grid representation, due to the uniform structure requirement, layer 2, 720, must have those triangle nodes as well. By using the graph representation, we can have many "access graph nodes" at layer 1, 740, and still keep very few graph nodes at layer 2, 730. The common nodes of layer 1, 740, and layer 2, 730, have the same structure. This way, the memory as well as routing time can be reduced. In other

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embodiments, common nodes of different layers can have at least partly different structure."

Please amend paragraph no. [0054] beginning at page 15, line 19, as follows:

"FIG. 9 shows a channel structure 910 between two Macro cells 920 and 930. If the global routing wire within the channel 910 are straight, then we can simply create two graph nodes, one at or by the left entrance and one at or by the right entrance, for one or more of the routing tracks. With this graph structure, the memory and run time are significantly reduced. In contrast, the grid based router must generate lots of grid based on the routing pitch of a layer. Therefore, it will generate lots of grids regardless of the fact that the channel structure exists and global routing wires are straight. When the global routing wire is not straight, a few more nodes inside the channel can be added to facilitate the routing. Essentially, the idea illustrated in FIG. 9 can be used to add more or less nodes into the channel area. Other embodiments can place one or more nodes in the channel at a density less than the routing pitch."